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VOL.7 No. 15

APRIL 12, 1957

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U. S. DEPARTMENT OF AGRICULTURE

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL BRANCH

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL BRANCH

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Plant Pest Survey Section
Plant Pest Control Branch
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

Volume 7 April 12, 1957 Number 15

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

MORMON CRICKET hatch developing in Nevada. (p. 267).

CLOVER LEAF WEEVIL unusually abundant in Indiana and heavy in Illinois. Several other States report infestations. (p. 267).

MEADOW SPITTLEBUG hatching in Maryland. (p. 268).

VETCH BRUCHID reported from Illinois for first time. (p. 269).

INSECT and MITE outlook on citrus in Florida. (p. 270).

APPLE APHID appearing on apple at Hancock, Maryland and in Orange County, New York. (p. 269).

TOBACCO BUDWORM light to moderate on tobacco in several Georgia counties. (p.272).

COTTON FLEAHOPPER survival report from Waco, Texas. (p. 271).

BOLL WEEVIL survival surveys show lower numbers than last spring in Florence County, South Carolina; Madison Parish, Louisiana and the delta area of Mississippi but southeastern Virginia counts are greater than in 1956. (p. 272). Outlook at Waco, Texas. (p. 273).

TEXAS LEAF-CUTTING ANT damage to pine seedlings in eastern Texas unusually severe. (p. 275).

SUMMARY OF FOREST INSECT CONDITIONS - 1956. (p. 277).

First Reported Records of Season (by areas)
ALFALFA WEEVIL hatching in Nevada and Delaware. ARMYWORM moths in Missouri. PEAR PSYLLA laying eggs in Columbia County, New York, March 28. PLUM CURCULIO eggs in peaches at Fort Valley, Georgia, March 20. CLOVER MITE eggs hatching in Jackson County, Oregon, March 27. COLORADO POTATO BEETLE adults at Florence, South Carolina, March 19. EASTERN TENT CATERPILLAR hatching in Delaware.

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CORRECTION: CEIR 7(13):245 - Known Distribution of Imported Fire Ant - North Carolina reports all infestations in that State eradicated.

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Reports in this issue are for the week ending April 5 unless otherwise designated.

WEATHER OF THE WEEK ENDING APRIL 8

Numerous and varied noteworthy weather events were observed over the Nation this week. Moderate to heavy snowfalls, accompanied by gusty winds, characterized the picture in the northern and central Rocky Mountain regions and central Plains States for the third consecutive weekend and extended influences eastward into the southern Lakes region and New England. To the southwest of the storm centers, winds raised dust in portions of Arizona and New Mexico; while in advance of the frontal systems, thunderstorm activity with hail, strong winds, and downpours of rain causing local flooding were frequent, and tornado destruction was the worst of the season.

Tornado activity was observed from eastern Texas and Oklahoma northeastward to southern Michigan early in the week, and eastward through the Gulf States into northern Georgia, the Carolinas, and Virginia at the end of the period. On the 2nd. 10 lives were lost, and unofficial estimates of 1.5 million dollars property damage were reported, as a tornado cut a 21-mile path across Dallas, Tex. The same day another life was lost at Paris, Tex., and 5 deaths were reported in Oklahoma with the observance of 15 tornadoes in that State. On the 8th., at least 6 lives were lost and 100 persons injured as a series of tornadoes slashed through the Southeast.

Winds with gusts reaching 86 m.p.h., at Sandusky, Ohio, 70 m.p.h., at Fort Wayne, Ind., 74 m.p.h. at Pittsburgh, Pa., and 75 m.p.h., at Wilmington, N. C., were observed on Friday; and 63 and 59 m.p.h., gusts were reported at Chincoteague, Va., and Washington, D. C., respectively, on Tuesday morning.

Precipitation amounts were moderate to heavy over the vast area east of lines extending generally from Boise, Idaho, to northern Michigan and to southwestern Louisiana, excepting Atlantic coastal sections where amounts were light. Over much of the area totals exceeded 1 inch, and east of the Mississippi most totals were in excess of 2 inches. In northern Arkansas, east central Indiana, and in a band from the southern Appalachians to the Gulf coast, 4-to over 8-inch accumulations were reported. In coastal Washington and northwestern Oregon totals were also moderate to heavy, while central and southern California, and southwestern Arizona and Texas received no precipitation.

Temperatures averaged above normal in California and southeast of a line extending from Del Rio, Tex., to Nantucket, Mass., while elsewhere averages were below normal. Greatest departures of -11° to -13° were observed in eastern Colorado, and plus departures of 5° or more in the southern Appalachians, and the vicinity of Sacramento, Calif.

Snow cover to depths of 4 to 7 inches still remains in northern locations of Michigan and Maine; and 2-to 7-inch depths in southern South Dakota, northern Nebraska, and from the southeastern Lakes region eastward to the coast as a result of recent storms. (Summary Supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - OKLAHOMA - Light scattered infestation in Cleveland County. (Coppock). TEXAS - Eight hundred to 1,000 acres of small grain treated in San Saba County. (Lindsey). LOUISIANA - Small numbers in small grain over State. (Oliver). MISSOURI - None found to date in extreme southwest and western counties. (Kyd, Thomas).

EUROPEAN CORN BORER (Pyrausta nubilalis) - ILLINOIS - Survival in central area averaged 77 percent and in north central area 72 percent. (Ill. Ins. Rept.). DELAWARE - Spring survey indicated approximate reduction of 32 percent between October 1956 and March 1957, inclusive, due to adverse weather and other factors. No transformation to April 4. (Milliron).

MORMON CRICKET (Anabrus simplex) - NEVADA - Hatch developing across State. First and second instars present in Humboldt, Eureka, Lander and White Pine Counties. (Del Curto, Maloney).

ENGLISH GRAIN APHID (Macrosiphum granarium) - OKLAHOMA - Light populations in barley fields in Tulsa area. (Coppock). DELAWARE - Common on barley and wheat in southern Kent and Sussex Counties. (Milliron).

BROWN WHEAT MITE (Petrobia latens) - UTAH - Hatched third week March in Salt Lake County. Some now present in wheat in Juab County. (Cox, Knowlton).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - DELAWARE - Isolated colonies prevalent in cereals. (Milliron).

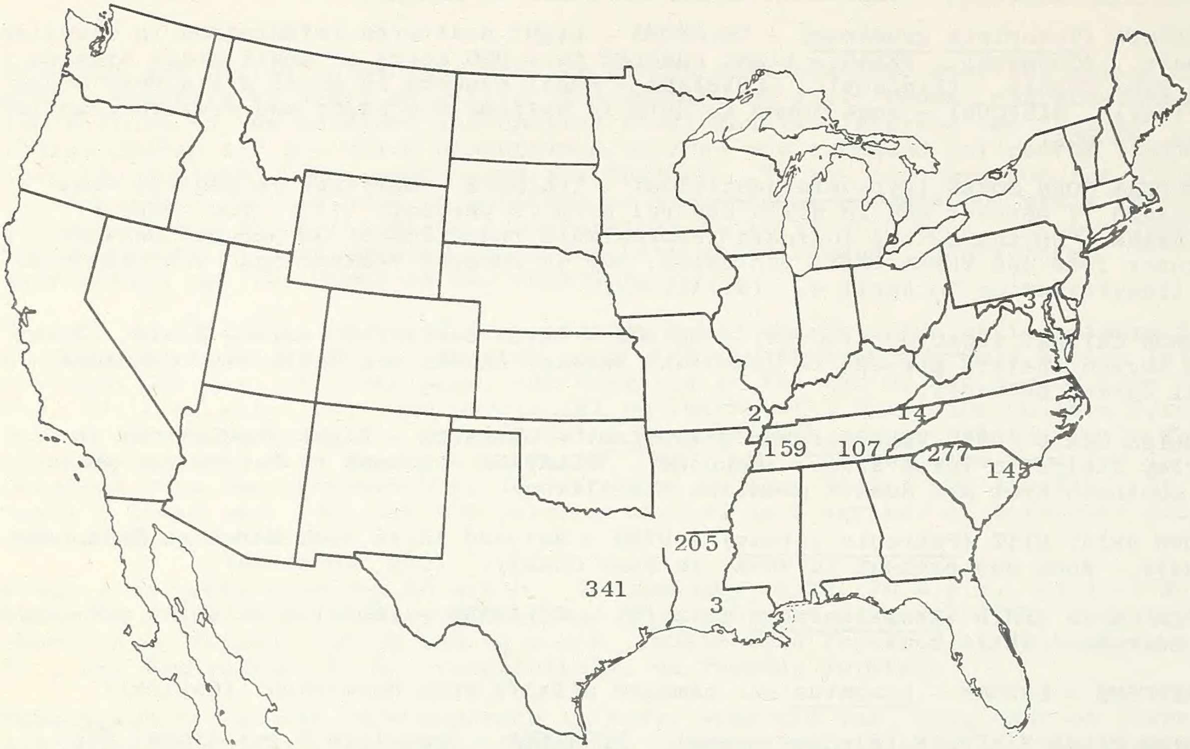
WIREWORMS - OREGON - Limonius sp. damaged alfalfa near Hermiston. (Capizzi).

PLAINS FALSE WIREWORM (Eleodes opaca) - NEBRASKA - From 1 to 2 per linear foot of wheat in Cheyenne, Deuel, Keith, Perkins, Chase, Hayes, Dundy and Hitchcock Counties. (Andersen).

ALFALFA WEEVIL (Hypera postica) - NEVADA - Heavy egg-laying in untreated fields in Washoe County. First hatching Pershing County. (Gallaway, Snider). UTAH - Spraying involved several thousand acres past two weeks. (Knowlton, Davis). NORTH CAROLINA - Additional counties found infested are Hoke, Rockingham and Sampson. Treatment general in eastern Piedmont with three-fourths of all farms being treated. In areas of heavy infestation, lack of control has resulted in complete loss of first cutting. (Jones, Farrier, Dogger). VIRGINIA - Larval activity and populations continue about the same as last week. Development slowed by weather. (Morris et al.). MARYLAND - Hatching generally on alfalfa on both sides of Chesapeake Bay. Thirty percent of alfalfa stems infested in 3 fields in Anne Arundel County, 50 percent of 6 fields in Queen Annes and Talbot Counties. Damage light. (U. Md., Ent. Dept.). DELAWARE - Adult feeding conspicuous on alfalfa generally. Hatching well advanced in Sussex County with second instars prevalent. (Milliron).

CLOVER LEAF WEEVIL (Hypera punctata) - OKLAHOMA - Common in alfalfa in south central counties, also in Creek, Tulsa and Rogers Counties; however not present all fields. Fields most sections averaged from minus 1 to plus 1 larva per square foot of surface area. (Coppock). MISSOURI - Larval counts range from 1 to 7 per alfalfa crown in southwest area and from 0 to 5 in central and southeast areas. Wide variation in larval development. Fifteen to 35 percent of larvae show evidence of fungus disease. (Kyd, Thomas). ILLINOIS - Abundant. (Ill. Ins. Rept.). INDIANA - Unusually abundant in scattered areas. (Osmun). VIRGINIA - From two to 40 per 100 sweeps in various counties but fungus disease active and controls not expected to be needed. (Morris). MARYLAND - Larvae average 8.5 per square feet in Ladino clover, Anne Arundel County. (U. Md., Ent. Dept.). PENNSYLVANIA - Feeding on alfalfa in Centre County. (Pepper).

Armyworm as Reported Week Ending April 5



ARMYWORM (*Pseudaletia unipuncta*) - LOUISIANA - Very light infestations in small grains in 3 parishes. (Oliver).

CABBAGE LOOPER (*Trichoplusia ni*) - GEORGIA - Infesting alfalfa in Sumter County at 40 per 100 sweeps. (Johnson).

MEADOW SPITTLEBUG (*Philaenus leucophthalmus*) - MARYLAND - Hatching on plantain in Anne Arundel County, April 2. (U. Md., Ent. Dept.).

CUTWORMS - UTAH - *Chorizagrotis auxiliaris* causing little damage to alfalfa some areas. (Knowlton). NEBRASKA - Continued activity of *Agrotis orthogonia* in Cheyenne, Deuel, Keith, Perkins, Chase and Dundy Counties. Light sandy soils more heavily populated than heavier soils. Larval size up to one-half inch. (Liljegren, Andersen). Light spotted infestations of *C. auxiliaris* occurring in Perkins, Chase and Keith Counties. Some feeding apparent. (Schick, Andersen). MISSOURI - Cutworms, largely *Feltia subgothica*, average 1 to 2 per square foot of alfalfa and pastures throughout southwest area. (Kyd, Thomas). PENNSYLVANIA - Partly-grown larvae on alfalfa in Centre County. (Pepper).

PEA APHID (*Macrosiphum pisi*) - ARIZONA - More numerous in several alfalfa fields at Yuma than spotted alfalfa aphid; some reduction of growth and honeydew. (Ariz. Coop. Rept.). LOUISIANA - Present in legumes over State with rapid increase in alfalfa in northwest and northeast areas. (Oliver). MISSOURI - From 1 to 12 per sweep of alfalfa in southeast areas and 0 to 1 per 10 sweeps in southwest area. Hard rains greatly reduced numbers. (Kyd, Thomas). GEORGIA - Infesting alfalfa in Sumter County at 145 per 100 sweeps. (Johnson). VIRGINIA - Up to 200 per sweep in one field but mostly lower. Weather favorable for aphid development. (Morris). DELAWARE - Common on alfalfa and clovers over State. Numerous on alfalfa in Greenwood vicinity. (Milliron). KANSAS - Counts averaged about 60 per 25 sweeps in roadside alfalfa in Geary County. (Matthew).

SPOTTED ALFALFA APHID - ARIZONA - Slight buildup in Pinal County. New stand of 700 acres required treatment. Not serious in most fields at Yuma. UTAH - Moderately numerous in Washington County. (Hughes). OKLAHOMA - Very light scattered infestations in south central and central counties. Less than 400 per square foot of alfalfa crown heaviest population noted. (Coppock). Heavy populations with some honeydew in areas of Beckham County. (Flora). MISSOURI - None found in southern half of State to date. (Kyd, Thomas). GEORGIA - Infesting alfalfa in Sumter County at 83 per 100 sweeps. (Johnson). KANSAS - Populations remain at extremely low numbers. Counts averaged about 30 per 25 sweeps in roadside alfalfa in Geary County. No winged forms found. (Matthew).

LEAFHOPPERS - UTAH - Often numerous, particularly *Aceratagallia* spp., in alfalfa fields in central south central area. *Dikraneura carneola* common on grassy roadsides, some on winter wheat. (Knowlton). FLORIDA - Up to 20 *Aceratagallia sanguinolenta* per 100 sweeps on lupine and other legumes in Alachua County. (Mead).

LYGUS BUGS - NEVADA - *Lygus nigrosignatus* heavy in some alfalfa fields in Washoe County. Population averaging 10 per square foot. (Gallaway). ARIZONA - *Lygus* spp., probably mostly *L. hesperus*, average 10 to 15 per 100 sweeps some alfalfa fields on Yuma Mesa. (Ariz. Coop. Rept.). UTAH - Adults, largely *Lygus elisus*, generally present in alfalfa and weeds. (Knowlton). LOUISIANA - Populations of *L. lineolaris* continue to buildup in alfalfa with 50 to 75 per 100 sweeps in Bossier, Natchitoches, Red River and East Carroll Parishes. (Oliver).

SPRINGTAILS - OKLAHOMA - Very abundant in alfalfa fields in Carter and parts of adjoining counties. Heavy infestation on oats in Bryan County. (Coppock, Flora).

STINK BUGS - ARIZONA - From 8 to 10 adults of *Euschistus impictiventris* per 100 sweeps on sorghum at Yuma. Few nymphs; apparently not increasing. (Ariz. Coop. Rept.). LOUISIANA - Occasional *Euschistus* sp., *Nezara viridula* and *Solubea pugnax* occurring in heading oats and barley in Acadia, Jefferson Davis and Madison Parish. (Oliver).

VETCH BRUCHID (*Bruchus brachialis*) - ILLINOIS - Collected on grass at Grand Chain, Pulaski County on April 28, 1954. Identified by L. J. Bottimer. Identification just received. (Ill. Ins. Rept.). As far as can be determined, this is a new record for Illinois.

CLOVER HAYWORM (*Hypsopygia costalis*) - INDIANA - Destroyed 400 bales of stacked hay in White County. (Osmun).

A CHINCH BUG (*Blissus leucopterus insularis*) - FLORIDA - Nymphs and adults averaging 115 per square foot of Saint Augustine grass sod at Tice, Lee County. (Denmark).

FRUIT INSECTS

APHIDS - WEST VIRGINIA - Intermittent hatch since March 15 on apple in Jefferson and Berkeley Counties. (W. Va. Ins. Surv.). MARYLAND - *Aphis pomi* appearing on apple at Hancock, Washington County, (U. Md., Ent. Dept.). DELAWARE - Hatch of *Anuraphis roseus* has commenced, *Rhopalosiphum fitchii* numerous and *Aphis pomi* present. (Kelsey). NEW YORK - *A. pomi* observed April 1 in Orange County. (Wkly.News.)

PEAR PSYLLA (*Psylla pyricola*) - NEW YORK - Egg-laying March 28 in Columbia County. (Wkly. Newsletter).

EUROPEAN RED MITE (*Metatetranychus ulmi*) - WEST VIRGINIA - Eggs numerous on apple in Jefferson and Berkeley Counties. Viability 85 to 93 percent. (W. Va. Ins. Surv.). NEW YORK - Carryover appears heavier than normal in many apple and prune orchards in Niagara County. (Wkly. Newsletter).

PLUM CURCULIO (*Conotrachelus nenuphar*) - GEORGIA - Eggs found in little peaches in orchard at Fort Valley on March 20. (Snapp).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - INDIANA - Still laying eggs in Vincennes area. (Hamilton).

TARNISHED PLANT BUGS (Lygus lineolaris) - INDIANA - Adults increased on peaches in Vincennes area. (Hamilton). First noted at Orleans on March 31. (Marshall).

PEACH TREE BORER (Sanninoidea exitiosa) - OKLAHOMA - Severe infestation with heavy damage to peach trees in one orchard in Pontotoc County. (Coppock).

GREAT BASIN TENT CATERPILLAR (Malacosoma fragilis) - ARIZONA - Moving from cottonwoods and causing some damage to fruit trees in Phoenix area. (Ariz. Coop. Rept.).

CLOVER MITE (Bryobia praetiosa) - OREGON - Earliest eggs hatching on peach trees in Jackson County, March 27.(Gentner).

Insect and Mite Outlook, Citus Experiment Station, Lake Alfred, Florida: This outlook is based on only partially verified assumptions concerning effects of weather factors, and the assumption is made that weather beyond the period of the current U.S.W.B. 30-day Outlook will be normal. PURPLE SCALE infestations will increase until peak reached early in July but infestations will be below average. In fall and winter, infestations will be above average and expected to be high in spring of 1958. FLORIDA RED SCALE infestation will be high in spring and early summer but will be below average through the late summer and fall. CITRUS RED MITE infestations will average much lower than past two years and will be below average through the summer. CITRUS RUST MITE infestations during next quarter will be determined by moisture. Assuming spring will not be dry, infestation expected to be above average. SIX-SPOTTED MITE infestations will begin to increase about middle of April and will reach peak in late May or June. Even the maximum level will be low. APHID infestations will decline but will be troublesome in some young groves and in some Temples and tangerines. MEALYBUG infestations will be about average. (Pratt, April 1).

COTTONY-CUSHION SCALE (Icerya purchasi) - ARIZONA - Heavy build-up on citrus and ornamentals in Maricopa County. (Ariz. Coop. Rept.).

PECAN NUT CASEBEARER (Acrobasis caryae) - TEXAS - Larvae abundant and feeding on buds in San Saba County. (Garner).

TRUCK CROP INSECTS

BEET LEAFHOPPER (Circulifer tenellus) - UTAH - Six northern breeding grounds containing some 75 square miles averaged 0.11 overwintering leafhopper per square foot. Reading show 4.5 percent of leafhoppers viruliferous. Average of 967.5 million infective leafhoppers overwintered in 1957 compared with 5,619.8 million in 1956. In addition to lower population, present germination of common Russian-thistle will probably absorb a portion of first brood in late May and early June that would otherwise move to adjacent cultivated tomato districts. (Dorst).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - SOUTH CAROLINA - First adults of season on potato plants at Florence on March 19. (Reid).

BEAN LEAF BEETLE (Cerotoma trifurcata) - GEORGIA - Moderate infestation on beans in Brooks and Lowndes Counties. (Johnson).

IMPORTED CABBAGEWORM (Pieris rapae) - VIRGINIA - Adults flying in winter crucifers on warm days. Probably beginning to oviposit. No fresh larval damage noted. (Brubaker, Greenwood, Hofmaster).

SPIDER MITES - VIRGINIA - Unusual numbers present on strawberries in Norfolk area; no appreciable damage at present. (Brubaker, Greenwood, Hofmaster). NEW YORK - TWO-SPOTTED SPIDER MITE on strawberry leaves at Riverhead; some eggs observed. (Wkly. Newsletter).

SEED-CORN MAGGOT (Hylemya cilicrura) - OKLAHOMA - Severe damage to some sweet corn and bean plantings in Marshall County. (Vick).

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - NORTH CAROLINA - Local severe larval infestation in strawberries in Caldwell County. (Kolbe, Dogger).

TOBACCO INSECTS

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - GEORGIA - Light infestations in Tift, Colquitt, Brooks, Lowndes and Cook Counties. Moderate infestations in Berrien, Atkinson, Appling, Tattnall and Candler Counties. (Johnson).

TOBACCO BUDWORM (Heliothis virescens) - GEORGIA - Light infestations on tobacco in field in Lowndes, Cook, Berrien, Atkinson Counties. Moderate infestation in Appling, Tattnall and Candler Counties. (Johnson).

COTTON INSECTS

Cotton Fleahopper Hibernation and Survival at Waco, Texas: Collections of two species of croton were made on November 21 and 23, 1956 for cotton fleahopper survival studies. One hundred Croton texensis plants were collected from one location in each of Bell, Coryell and Bosque Counties and one hundred Croton capitatus plants were collected from one location in each of McLennan, Falls, Limestone and Hill Counties. The host plants were installed in emergence cages (100 plants per cage) on February 15, 1957. The first emergence of cotton fleahopper nymphs occurred on March 1. Total emergence for the month was 7,848. This was considerably greater than for any year since 1948 except 1953 when 7,269 emerged during the same period. Collections of host plants and locations were the same for all years. Drought during last summer was unfavorable for the development of a heavy crop of croton in central Texas. However, cotton fleahopper survival is expected to be high and moisture conditions are favorable for development of such early hosts as evening primrose and horsemint and a consequent build-up of populations of these plants. If conditions continue to be favorable, migration of the pest to cotton when horsemint matures may be expected in late May and early June. This should occur during the time that early-season insecticide applications are made in the area and their use should prevent cotton fleahopper damage to the crop. (Parencia).

Cotton Insect Situation, Lower Rio Grande Valley, Texas: APHIDS and BOLLWORMS caused most apparent damage with aphid infestation mostly occurring along river in eastern area. Some CUTWORM and DARKLING BEETLE damage to young cotton in Mission area. (Deer).

CUTWORMS - TEXAS - Cutting young cotton in Zavala County. Infestation light to severe. (Richardson).

A MAY BEETLE (Phyllophaga rubricosa) - TEXAS - Newly-emerged adults feeding on cotton leaves in Starr County. (Alex, Morrow).

Boll Weevil Survival Survey - Spring 1957

SOUTH CAROLINA, NORTH CAROLINA and VIRGINIA - Spring surface woods trash examinations were conducted from February 25-April 1 in the same five representative areas of these States in which fall examinations were made in 1956. Results of the examinations were as follows:

Areas	Avg. No. Weevils Per Acre	Percent Survival
1. South central S. C.	2,527	68.0
2. Coastal Plains S. C. & N. C.	2,850	33.0
3. Piedmont S. C. & N. C.	4,866	77.6
4. North central North Carolina	1,559	32.3
5. Southeastern Virginia	1,210	29.0

As can be seen, the percent survival was lowest in Virginia and highest in south central South Carolina. In Florence County, South Carolina, an average of 1,236 weevils per acre was found this spring with a winter survival of 21.4 percent, which is the lowest percent survival on record for the county. Only in 3 years (1940, 1944 and 1952) have fewer weevils been found in spring examinations in this county. Southeastern Virginia had average of 85 per acre in spring of 1956.

MISSISSIPPI - Examinations of woods trash were made March 15-25. Wherever possible, samples were taken from same locations that were sampled last fall. The table below shows results of this survey.

Areas	Avg. No. Weevils Per Acre	Percent Survival
1. Lower delta	619	26.1
2. Central delta	404	22.7
3. North delta	350	14.2
4. Hill section	565	34.4

The percent survival was lowest in the north delta and highest in the hill section. An average of 1355 weevils per acre was found in six delta counties in spring of 1956.

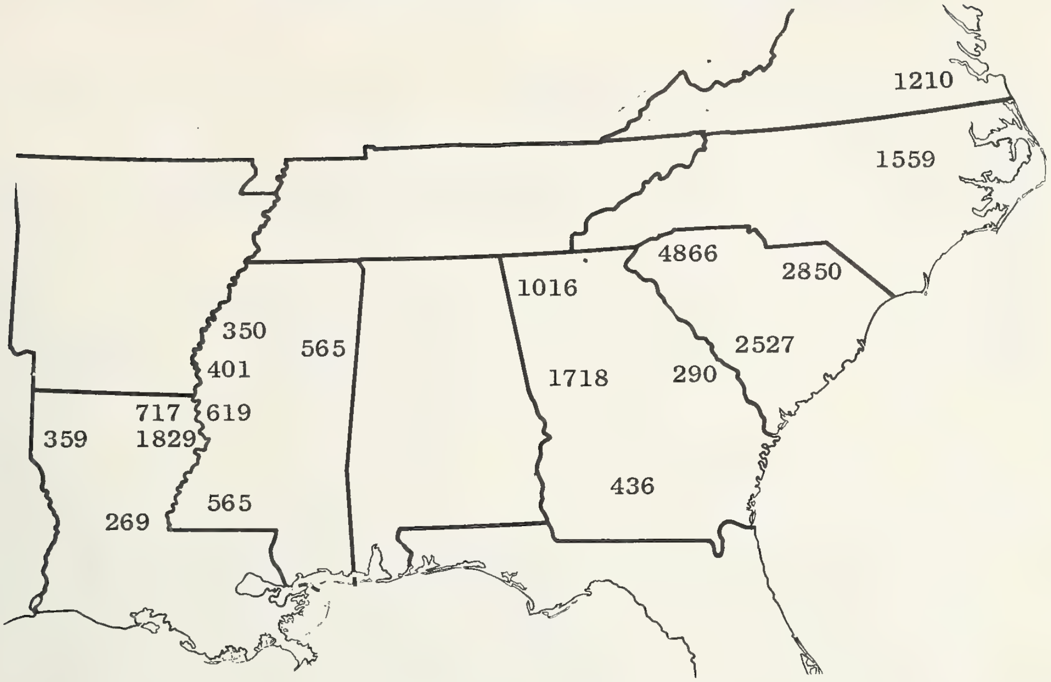
LOUISIANA - Survey was conducted March 1-29. Survival was high with 1,937 weevils per acre being found in Madison Parish. Only in three of the past 21 years (1950, 1955 and 1956) has this number been exceeded in this parish; the number in the spring of 1956 was 3,654 weevils per acre. The average for the State this spring is 1,175 weevils per acre or an average survival of 67 percent. Counts by areas are as follows:

Areas	Avg. No. Weevils Per Acre	Percent Survival
1. Northeast	1,829	70
2. Northwest	359	57
3. North central	717	57
4. South central	269	50

(Cotton Ins. Sect. with PPC and States Coop.).

Boll weevil survival survey continued -

Boll Weevil Survival Spring 1957*



Figures = number per acre. *Includes reports received to April 10.

TEXAS (Waco) - Five hundred field-collected boll weevils were installed on October 31, 1956 in each of 10 cages located in a wood lot in a continuance of survival studies made each year beginning with the winter of 1939-1940. Activity in March, 1957 was 4.2 weevils per inspection, compared with the moderate to high survival years when activity ranged from 4.3 to 26.5. Rainfall for January, February, March in 1957 was 1.57 inches above normal. Weather during the winter was mild. Freezing temperatures occurred on 22 days with the lowest being 19° on January 17, 1957. Because the winter was mild, survival may be expected to be comparable with that of 1954, 1953, 1952, 1950, 1946, 1945 and 1944 but probably less than that of 1955 and 1941 when survival was extremely high. However, weevils entered hibernation quarters last fall in fewer numbers than normal for the area as conditions were unfavorable for the usual heavy late-season build-up. (Parencia).

INSECTS AFFECTING MAN AND ANIMALS

A BLACK FLY (*Prosimilium hirtipes*) - DELAWARE - Annoying man at Newark in late afternoon, April 7. (Milliron).

COMMON CATTLE GRUB (*Hypoderma lineatum*) - FLORIDA - Degree of infestation of cattle at Belle Glade, Palm Beach County was 13 per animal with 95 percent infested January 16, 16 per animal with 94 percent infested February 13, 12 per animal with 96 of 67 infested March 13, 8 per animal with 93 percent of 67 infested, April 15. (Harris, Genung).

SHEEP KED (*Melophagus ovinus*) - UTAH - Moderate to numerous in herds. Approximately 75,000 sheep in Sanpete County sprayed following shearing. Herds of 2,000 to 3,000 being sprayed in several additional counties following shearing and lambing. (Knowlton, County agents).

CATTLE LICE - UTAH - Control active many counties. Approximately 15,000 head treated in Millard County; 3,000 one area of Juab County; 2,000 dipped at Manti; and spraying in Wayne, Sanpete, Piute and other counties. (Knowlton, County agents).

MOSQUITOES - UTAH - Larvae of *Aedes campestris* and *A. niphadopsis* numerous some Grantsville and Dolomite areas. Some larvae at Richmond. (Harmston). Control required on 1,100 acres in Weber County. Some adults of *Aedes dorsalis* and *Anopheles freeborni* taken. (Fronk, Knowlton). LOUISIANA - *Aedes sollicitans* remains in tremendous numbers in Plaquemine Parish. (Oliver).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

TENT CATERPILLARS - UTAH - Damaging cottonwoods in Saint George area. (Hughes). LOUISIANA - *Malacosoma americanum* clusters appear to be increasing in size and number over northern area. (Oliver). MISSISSIPPI - *M. americanum* on wild cherry trees in Choctaw, Oktibbeha and Webster Counties. (Cochran, Hester, Neel). TEXAS - *M. americanum* tents on plum trees in Houston County. No damage noticed. (Turney). DELAWARE - Small nests of *M. americanum* and larvae on wild cherry at Georgetown. (Kelsey).

A PINE TORTOISE SCALE (*Toumeyella* sp.) - PENNSYLVANIA - Heavy infestation just west of Breezewood in Bedford County, and in several areas between Breezewood and Everett ,and Bedford and Schellsburg. Also heavy in Shawnee State Park and in certain areas in Fulton County. Host in every instance was *Pinus virginiana*. (Sleesman, Nelson, Jeffery).

SYMPHYLIDS - PENNSYLVANIA - Heavy infestation in over 5000 four-inch potted geranium plants in Jefferson County. (Adams).

AZALEA BARK SCALE (*Eriococcus azaleae*) - WEST VIRGINIA - Medium infestation on azalea in Lewis County. (W. Va. Ins. Surv.).

RUSTY PLUM APHID (*Hysteroneura setariae*) - LOUISIANA - Moderately infesting some ornamental trees in East Baton Rouge Parish. (Oliver).

OYSTERSHELL SCALE (*Lepidosaphes ulmi*) - UTAH - Damaging several hundred ash trees in Sanpete County. Infestation often very severe. (Knowlton).

SOUTHERN PINE BEETLE (*Dentroctonus frontalis*) - TEXAS - Infestation on ten acre area, previously burned, near Honey Island in Hardin County. Control applied (Tex. For. Pest Comm., Feb. 1957). ARKANSAS - None reported to April 1. (Ark. For. Comm.).

BLACK TURPENTINE BEETLE (Dendroctonous terebrans) - TEXAS - Causing some mortality of large pines in Anderson, Houston and Trinity Counties. (Tex. For. Pest Comm., Feb. 1957).

TEXAS LEAF-CUTTING ANT (Atta texana) - TEXAS - Damage to pine seedlings throughout eastern area more severe than in recent years. (Tex. For. Pest Comm., Feb. 1957).

IPS BEETLES - TEXAS - All stages present throughout southern portion of eastern area. (Tex. For. Pest Comm., Feb., 1957). ARKANSAS - Little current buildup activity. (Ark. For. Comm., April 1).

MISCELLANEOUS INSECTS

TERMITES - SOUTH DAKOTA - Infestation of Reticulitermes sp. found in city of Vermillion, Clay County. Many winged forms noted. (Hantsbarger). WEST VIRGINIA - Emergence of R. flavipes in dwellings light to heavy in Monongalia County. (W. Va. Ins. Surv.). DELAWARE - Swarming indoors at Newark, April 3. (Milliron).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - GEORGIA - Light infestation in Macon and Henry Counties. (Scott). Heavy infestations in Muscogee and Chattahoochee Counties. (Fletcher).

CARPET BEETLES - NORTH DAKOTA - Numerous specimens received in recent weeks from many areas of State. (N. D. Ins. Rept.).

BOXELDER BUG (Leptocoris trivittatus) - UTAH - Abundant in many communities with numerous complaints from homeowners. (Knowlton).

SPRINGTAILS - ARIZONA - Causing some nuisance in houses at Yuma. (Ariz. Coop. Rept.).

BENEFICIAL INSECTS

PREDATORS - UTAH - Lady beetles moderately numerous in number of alfalfa fields. Adult Orius tristicolor and Geocoris decoratus also occasionally found. (Knowlton).

ADDITIONAL NOTES

IDAHO - ALFALFA WEEVIL adults numerous and active in southwestern and south central areas. (Portman, Cross). In the Boise Valley area, APHIDS generally found on apple trees. CLOVER MITE eggs numerous on apples and PEAR PSYLLA adults general in pear orchards. (Portman).

LIGHT TRAP COLLECTIONS

	Pseud. unip.	Agro. yyps.	Prod. orn.	Perid. marg.	Feltia subt.	Hel. zea	Tri. ni.	Laphy. frug.
TEXAS								
Beaumont 3/16-30	15	47	31	5	42	1		
Greenville 3/16-30	107	24		65	23		2	
Weslaco 3/16-31	300	489	19	20	266	849	955	59
Winter Haven 3/16-31	45	56		29	67	99	40	1
Brownsville 3/24-30	1	6		3	15	16	19	11
Waco 3/30-4/5	341			207	12		4	
LOUISIANA								
Curtis 3/27-4/2	205	73	3	39	9	1	3	
Baton Rouge 3/30-4/5	2	12		6	23			
Franklin 3/29-4/4	3		16	2	8			
MISSOURI								
Sikeston 3/4	1							
Sikeston 3/23	1	2						
Sikeston 3/29	1							
Sikeston 4/1	2							
TENNESSEE (Counties)								
Lauderdale 3/26-4/1	159	13						
Madison	93	5		2				
Lawrence	47	3	1	3				
Maury	35			3				
Robertson	2							
Cumberland	4	1	1					
Knox	8	2						
Greene	14		1	2				
Blount	7	7	3	2				
Monroe	107	12		3				
Johnson	2	3						
ALABAMA (County)								
Baldwin 2/12-14	3							
Baldwin 3/12-14	6		2			1		
Baldwin 3/19-21	11		3			2		
FLORIDA (County)								
*Gadsden 3/25		1				2		
SOUTH CAROLINA (Counties)								
Florence 3/23-29	145	33		4	2			
*Charleston 3/18-24	16	19	3	7	11	1		
Oconee 3/30-4/5	277	29	1	6	2		4	
MARYLAND (County)								
Montgomery 3/29-4/4	3	1						

* Other Collections: FLORIDA (Gadsden-3/25); *Heliothis virescens* - 1
SOUTH CAROLINA (Charleston - 3/18-24); *Protoparce sexta* - 5

NORTH DAKOTA - Fargo - Collections during 1955 contained 119 species of Phalaenidae. Det. U.S. Nat. Mus. (N.D. Ins. Rept.).

A STATUS REPORT ON FOREST INSECT CONDITIONS IN 1956 [1]

Compiled by
Division of Forest Insect Research

STATUS IN BRIEF

In comparison to conditions during the past few years, there was a marked decrease in the over-all scope and severity of forest insect infestations in the United States during 1956. Although there was an upsurge in populations of a few important insect pests in some sections of the country, the decline of other species elsewhere more than offset these increases. For the most part, the reduction of infestations, and a lessening of the damage and loss caused to the forest resources of the Nation, was brought about by concerted efforts on the part of Federal, State, and private agencies to locate and promptly suppress epidemic populations of the destructive species. Natural control factors, of course, also were important in reducing pest populations in many instances.

Generally speaking, insect outbreaks in Oregon and Washington declined for the second successive year. Epidemic infestations in those two States totalled 1,542,000 acres in 1956 as compared to some 2-1/2 million acres in 1955 and more than 7-3/4 million acres in 1954. The spruce budworm, _Choristoneura fumiferana_ (Clem.), the Douglas-fir beetle, _Dendroctonus pseudotsugae_ (Hopk.), and the silver fir beetles, _Pseudohylesinus_ spp., particularly, were much reduced from their levels in preceding years. However, infestations of the balsam woolly aphid, _Chermes piceae_ (Ratz.), increased both in scope and severity and this major pest poses a severe threat to large areas of valuable fir timber in the Pacific Northwest Region.

The situation in California also is somewhat better than it was in 1955. The outbreak of Douglas-fir beetle, _Dendroctonus pseudotsugae_ (Hopk.), in the North Coast section of the State has practically subsided; aerial application of DDT sprays suppressed the epidemic of Douglas-fir tussock moth, _Hemerocampa pseudotsugata_ McD., in the South Central Sierras; and most species of bark beetles were at low endemic levels statewide. The lodgepole needleminer, _Recurvaria milleri_ Busck., however, increased in severity and the defoliated trees are being readily attacked and killed by _Dendroctonus monticolae_ Hopk.

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[1] This report is a compilation of information on the status of forest insects submitted by the Forest Experiment Stations, the Federal land-managing agencies, state forestry and conservation organizations, lumber companies, timber operators, private land-owners, and other individuals.

The mixed conifer forests throughout the northern and southern Rocky Mountains are affected by a great many destructive insects and one or more species usually occurs in outbreak proportions every year. The year 1956 was no exception. For example, the spruce budworm, *Choristoneura fumiferana* (Clem.), is epidemic on some 4,000,000 acres in the northern Rockies and infestations of lesser severity also occur over large acreages in southern Colorado, and in New Mexico. The mountain pine beetle, *Dendroctonus monticolae* Hopk., is also widespread in Utah, Idaho, Wyoming and Montana and populations appear to be increasing in many areas. It is noteworthy, however, that the severe epidemics of *Dendroctonus engelmanni* Hopk. have practically subsided in all of the Rocky Mountain States and other bark beetle species also are much reduced from prior years.

There was a slight increase in the scope and severity of a few of the important forest insects in the Central States, the Lake States, and in the Northeast. Plantation insects, particularly the European pine shoot moth, *Rhyacionia buoliana* (Schiff.), and the white pine weevil, *Pissodes strobi* (Peck), were more prevalent in portions of these States, and there was an increase in the extent and severity of the spruce budworm, *Choristoneura fumiferana* (Clem.), in Minnesota and Maine; and of the jack-pine budworm, *Choristoneura pinus* Free., in Wisconsin. Several species of Neodiprion sawflies also were numerous throughout all of this region. The extensive epidemics of forest tent caterpillar, *Malacosoma disstria* Hbn., during 1954 and 1955, however, have subsided in all of the Northeast and in most of the Lake States. Gypsy moth infestations also are at a low ebb but this important pest spread during the year into central New York, northern New Jersey, and portions of Pennsylvania.

Insect outbreaks in the southern and southeastern States declined some from previous years. With minor exceptions, the extensive infestations of southern pine beetle, *Dendroctonus frontalis* Zimm., have been brought under control and improved precipitation has helped to reduce the heavy tree-killing caused by *Ips* beetles in some areas. There was, however, an increase in *Ips* beetle populations in the drought-stricken South during the late summer months and a few species of hardwood defoliators occurred in outbreak proportions in some areas.

Insect activity in Alaska is at the lowest point in several years. The outbreak of blackheaded budworm, *Acleris variana* Fern., that raged throughout most of southeast Alaska from 1948 to 1955 ended. The hemlock sawfly, *Neodiprion tsugae* Midd., also recently epidemic over large areas in southeast Alaska, has now declined to moderate activity in a few scattered locations. Except for *Ips interpunctus* Eichh., which occurs in outbreak proportions over a broad area in Interior Alaska, bark beetle infestations also are at relatively low levels.

STATUS OF MAJOR INSECT PESTS

DOUGLAS-FIR BEETLE, Dendroctonus pseudotsugae (Hopk.)- There was a marked reduction in the amount of tree-killing caused by this major pest in most of the Douglas-fir forests of the West. Although most of the infestations throughout the region declined as a result of natural control factors, large volumes of beetle-killed timber were salvaged and the removal of infested trees from the stands also has contributed to the decline.

Although there were 307 centers of infestations covering about 117,000 acres in Oregon and Washington, this compares to 873,000 acres infested in 1955 and over 5 million acres in 1954. The only large outbreak remaining in the Pacific Northwest occurs on the Colville Indian Reservation in northeastern Washington and salvage logging is expected to reduce this infestation during 1957. In northwestern California, tree-damage is now restricted to about 50,000 acres, whereas some 250,000 acres were heavily infested in this area only two years ago. The over-all picture in north Idaho and Montana is that beetle-caused tree mortality is lower than has been the case for several years past. There are, however, a number of small localized epidemic centers in portions of these two States and there was an increase in infestations of the species reported in the Southwest where an estimated 30 million board feet of Douglas-fir timber was killed on some 400,000 acres. Beetle activity also has increased steadily in southern Utah for the past three years and during that period it has killed as much as 30% of the stands in that area.

ENGELMANN SPRUCE BEETLE, Dendroctonus engelmanni Hopk.- This important tree-killing bark beetle has occurred in epidemic numbers throughout the extensive stands of Engelmann spruce in the Rocky Mountain States during most of the past 10 or 15 years. Recently, however, infestations have declined and, with minor exceptions, populations are now at low endemic levels in all areas.

A few scattered centers of beetle activity remain on the Lolo and Kootenai National Forests in Montana; on the San Juan, Uncompahgre, and Rio Grande National Forests in Colorado; and on the Carson National Forest in New Mexico. Pockets of tree-killing also were found on the Cache and Bridger National Forests in northern Utah and western Montana, and a single outbreak occurred on some 7,000 acres on the Wallowa-Whitman National Forest in eastern Oregon.

In all cases where infestations are active, control is being continued by salvaging the infested trees, or by felling and spraying them with insecticides. Parasites and predators, feeding by woodpeckers, and abnormally low winter temperatures all have been of major importance in reducing infestations and in keeping them in check.

WESTERN PINE BEETLE, Dendroctonus brevicomis Lec.- This insect has long been known as the most important single enemy of ponderosa pine in the western United States and, during the course of the past fifty years, it has killed several billion board-feet of high-quality pine timber in California, Oregon, Washington, Idaho, and Montana. It is noteworthy, therefore, that the insect population is currently at an extremely low level throughout the western States and is causing less tree mortality than has been known in records to date. In Oregon and Washington, light to moderate infestations were found this year at only 70 locations on areas totalling only 14,530 acres. This compares with some million or more acres of infestations in the two States only three years ago. A slight increase in the beetle population did occur late in the year in southern Oregon but resultant tree mortality was not alarming. In California, increasing infestations were located at a few places in the second-growth pine stands along the Sierra foothills, and to some extent in the islands of timber in the mountainous areas in the southern part of the State. Elsewhere in the West the beetle population is at a very low level.

Practices in timber harvesting, where particular attention is given to the removal of trees known to be of high-risk to beetle attack, is credited with having reduced the hazard of many ponderosa pine stands to attack by the beetles. In addition, favorable precipitation in the past few years has increased tree vigor and thus has prevented a build-up of beetle populations in most areas

JEFFREY PINE BEETLE, Dendroctonus jeffreyi Hopk.- At times, this aggressive insect is a destructive pest of Jeffrey pine throughout the range of the tree species in California. During the past few years, however, tree-killing within the State has been relatively light and, with minor exceptions, such was the case during 1956. Moderate to heavy losses were found in some areas on the Inyo National Forest east of the Sierra Nevada Mountains, and on the Cannel Working Circle of the Sequoia National Forest. The selective removal of high-risk trees from Jeffrey pine stands has also proved to be successful as a means of control for the Jeffrey pine beetle and this practice is being employed as rapidly as possible in all areas that are susceptible to attack.

MOUNTAIN PINE BEETLE, Dendroctonus monticolae Hopk.- Several different species of pines in the western United States are favored hosts of the mountain pine beetle and there is seldom a year when the insect is not in outbreak status in one or more tree species within its range. Currently, a serious epidemic occurs in lodgepole pine in the Dingley Creek drainage, adjacent to Tuolumne Meadows, in Yosemite National Park, California. Another outbreak affecting the same tree species was located in the South Warner Mountains in the northeastern part of the State. Some 129 centers of infestation in lodgepole pine were found on about 64,000 acres in eastern Oregon and Washington, and two small outbreaks on the same host also were found at separate locations in Glacier National Park, Montana. The older centers of infestation at Wanoga Butte and Buck Lake in Oregon, and Chiwawa in Washington, continued but the intensity of the outbreaks declined due to decreased host material.

As many as 8,000 trees were attacked and killed on several areas on the north fork of the Shoshone River in northwestern Montana; 400 trees on 200 acres along the Little Smoky Creek drainage in central Idaho; and 2,100 trees in the Signal Mountain, Dell Creek, and Ditch Creek areas of the Grand Teton National Park and the Teton National Forest, in Wyoming. In addition, the beetles again killed in excess of 100,000 lodgepole pines on the Ashley and Wasatch National Forests in northern Utah. This epidemic in these areas has been in existence for the past six or seven years.

In ponderosa pine, infestations and resultant tree-killing were not extensive and, with a few exceptions, were not serious anywhere within the Western Regions. Heavy losses are continuing in a small area of second-growth ponderosa pine near Crystal Bay at Lake Tahoe, Nevada, and at 13 locations covering 15,840 acres in portions of eastern Oregon. In the Powder River valley on the Wallowa-Whitman National Forest, severe killing of young trees has been in progress for the past 9 or 10 years where dense ponderosa pines, in mixture with other conifers, became established following land clearing.

Tree-killing in sugar pine was somewhat greater and more widespread in California than during the past few years but no infestations of serious proportions are known. Local centers of outbreaks in limber pine were found in the vicinity of Belknap Creek on the Shoshone National Forest in Wyoming, and the beetle killed several hundred scrub white, limber, and white bark pines on a portion of the Bridger National Forest in the same State. Losses in western white pine were rather heavy on about 137,000 acres in Washington.

BLACK HILLS BEETLE, Dendroctonus ponderosae Hopk.- This insect is a major pest of ponderosa pine in the Rocky Mountain States, and in the Black Hills of South Dakota. While there were local areas within the region where infestations continued at epidemic proportions, populations were, in general, at low levels in 1956. The high rate of tree-killing on the Dixie National Forest, and in Bryce Canyon National Park, in southern Utah which has been underway for the past few years, continued at previous levels despite repeated efforts to reduce populations by direct means. It is probable that this can be explained by the fact that the area has suffered from deficient rainfall for the past seven years and that reduced tree vigor has favored a build-up of beetle populations in the weakened trees. Severe tree-killing also was found at several locations on the Grand Mesa-Uncompahgre, Pike, Rio Grande, San Isabel, and San Juan National Forests in southern Colorado. All of the infestations are being controlled by logging the infested trees, or by spraying them with insecticides, and it is expected that populations in most areas will be at reduced levels during 1957.

SOUTHERN PINE BEETLE, *Dendroctonus frontalis* Zimm. Concerted efforts have been made during the past few years to suppress epidemic populations of this important insect pest. For the most part, control efforts have been very successful and the insect has been reduced to endemic levels in many areas. There are, however, epidemic centers of infestations remaining in the southern and southeastern States. The greatest concentration of populations currently are in North and South Carolina, and in eastern Tennessee.

It appears as though a continuation of beetle activity during the year has been associated with deficiencies in precipitation because infestations which were quiescent in the early spring months flared up and spread to widely scattered locations during the course of the summer and fall. Efforts to control the insect, and to prevent its spread to other areas, have been undertaken by the Federal and State governments, as well as by private landowners in all affected areas. Control measures have included salvage cuttings and the spraying of infested trees with formulated insecticides. In the southern and southeastern States, 3.8 million board feet of infested timber was salvaged and some 88,000 infested trees were felled and sprayed with toxic chemicals. Heavier losses and damage have been averted by this action and the over-all rate of tree-killing in all areas is now much less than in 1954-55.

SOUTHWESTERN PINE BEETLE, *Dendroctonus barberi* Hopk.- This bark beetle usually is found attacking and killing weakened ponderosa pines in the southwestern States. More often than not, however, its occurrence in infested trees is in association with other related species, namely *D. convexifrons* Hopk., *D. approximatus* Dietz., and *D. arizonicus* Hopk. There was a noticeable increase in mortality of ponderosa pine in many areas in Arizona and New Mexico during 1956 and *D. barberi* Hopk. was the most prevalent species in the dead and dying trees. However, since most of the heavy tree mortality occurred at the lower edges of the ponderosa pine timber type, it is believed that the tree-killing is closely related to deficiencies in annual precipitation. Some estimates, for instance, indicate that the cumulative deficiencies of precipitation in the southwestern United States is now more severe than at any time during the past 700 years.

Two small outbreaks of *D. convexifrons* Hopk. were recorded in Arizona without the association of attacks by *D. barberi* Hopk. or the other related species. One was in the vicinity of Oak Creek Canyon on the Coconino National Forest, and the other was at Mt. Graham on the Coronado National Forest. The Coconino infestation was suppressed by spraying the infested trees with insecticides.

BLACK TURPENTINE BEETLE, Dendroctonus terebrans Oliv.- This bark beetle has become increasingly destructive to several species of pines in the southern and southeastern states in recent years. The beetles appear to concentrate where pine stands have been selectively logged, in areas worked for naval stores, or along river bottoms and on other moist sites during seasons of subnormal rainfall. Several outbreaks occurred during 1956 in portions of the pine producing areas in Texas, Louisiana, Mississippi, North Carolina, Georgia and Florida and many of them required control treatment to prevent additional tree-killing. Infested trees are salvaged wherever possible but major emphasis in control programs has been to spray infested stumps and the butt portions of standing trees with toxic oils. The incidence of attack in recent years has been such as to induce timber-owners and land-managers to spray stumps, and to treat trees which have been damaged during logging, as a routine practice during periods of subnormal precipitation.

ALASKA SPRUCE BEETLE, Dendroctonus borealis Hopk.- Infestations of the Alaska spruce beetle have caused severe group-killing of white spruce at several locations in Alaska during past years. In 1955, the insect was particularly prevalent in Interior Alaska where road and power line construction had created large quantities of suitable host material. Currently, active centers of infestations occur only in local areas on the Kenai Peninsula and south of the Alaska Range. There has been no effort made to suppress infestations by direct means.

SITKA SPRUCE BEETLE, Dendroctonus obesus (Mann.)- A small outbreak of the Sitka spruce beetle has persisted at Port Bazan on Dall Island in Alaska for the past ten years, during which time it has killed somewhat more than a million board feet of Sitka spruce in that area. Although no other outbreaks of this insect are known to exist in Alaska, moderately heavy populations were found in water-damaged spruce where glacial streams had flooded some stands and, under favorable conditions, this infestation could erupt into outbreak status.

PINE ENGRAVER BEETLES, Ips spp.- Tree-killing as a result of attack by Ips beetles fluctuates widely from year to year, due apparently to the pattern of seasonal precipitation and to the abundance of green slash created by logging, wind-storms, or other factors. The year 1956 was an "Ips year" in Oregon and severe tree-killing by I. oregoni (Eichh.) was recorded at 324 places covering approximately 100,000 acres. A majority of these infestations occurred in the Blue Mountains in the eastern part of the State where logging had taken place in fringe-type stands.

Outbreaks of I. confusus (lec.) occurred in young stands of ponderosa pine in southern and central California, and damage by I. lecontei Sw., in New Mexico and Arizona also was severe in drought-stricken areas. Tree-killing by Ips beetles appears to be increasing throughout the southwestern Region.

There also are three species of Ips beetles in the pine stands of the Southern States, I. avulsus Eichh., I. calligraphus Germ., and I. grandicollis Eichh., which are destructive pests at periodic intervals. They are, in fact, becoming an annual problem in these States during the dry summer and autumn months. Heavy populations occurred in October and November throughout most of the South, especially in drought areas of east Texas. During that time, the number of infested trees increased from a low of two or three trees per square mile to as many as 15 trees per acre. The small engraver, I. avulsus Eichh., was the most prevalent species encountered in the infestation areas. It was found to have entered the upper boles of all infested trees, and in many cases, to have invaded the bark of entire trunks. Counts indicated that this species increased by about 1,000 percent per month during the fall period until cold weather late in November slowed its development. I. calligraphus Germ., and I. grandicollis Eichh., usually were found in the middle and lower trunk of the attacked trees but only after the smaller species had attacked the upper crown. Active programs to control these Ips infestations have been undertaken by all landowners in the affected areas by salvaging the trees or by killing the broods with a spray mixture of insecticide and fuel oil.

I. interpunctus Eichh., occurred in outbreak status over a rather widespread area in northeastern Interior Alaska. These infestations have been in progress for several years and have caused severe killing of white spruce in many areas. Currently, infestations are particularly noticeable over a broad area in the vicinity of Fort Yukon.

FIR ENGRAVER BEETLE, Scolytus ventralis Lec.- The rate of tree-killing caused by this important insect was reduced somewhat from the level of loss sustained in prior years in stands of red and white fir in the western States. Infestations in Oregon and Washington were confined to about 25,000 acres at higher elevations in the Cascade Range and, in California, tree mortality was moderate with no known areas of epidemic infestations anywhere in the State. The serious outbreak of several years duration on 7,000 or more acres in the Sandia Mountains of central New Mexico, however, continued unabated and as much as 80 percent of the trees have now been killed in portions of this area.

SMALLER EUROPEAN ELM BARK BEETLE, *Scolytus multistriatus* Marsh.- This bark beetle is distributed throughout the Midwestern and Northeastern States. It was particularly abundant during the year throughout the Central States where the Dutch elm disease and/or elm phloem necrosis has caused mass dying of elms. The insect has assumed major importance because of its role as a vector of the Dutch elm disease and active programs for control were undertaken by city, county, and state governments in an effort to prevent the killing of valuable elms in many areas.

SILVER FIR BEETLES, *Pseudohylesinus grandis* Sw., and *P. granulatus* (Lec.)- During 1954, most of the silver fir trees on a gross area of more than 650,000 acres in the Cascade Mountains of Washington were attacked and killed by these two species of fir beetles. The infestation at that time had been in progress for about four years and tree mortality was in excess of 500 million board feet. A marked decline in acreage and intensity of infestations was noted in 1955, and during 1956 the outbreak disappeared entirely. The cause of the decline in beetle populations is not yet fully known. It is suspected, however, that parasites, predators, diseases, and abnormally cold weather may all have played a role in reducing the infestations to their present low endemic level.

WESTERN BALSAM BARK BEETLE, *Dryocoetes confusus* Sw.- This insect has long been known as a primary pest of alpine fir and corkbark fir in the southern Rocky Mountains. The low commercial value of these fir species usually precludes detailed surveys to determine the severity and extent of infestations. Surveys were made during 1956, however, and the insect was found in outbreak proportions in several areas. Severe infestations were recorded on more than 100,000 acres at high elevations on the Carson and Santa Fe National Forests in northern New Mexico, and extensive tree killing also was observed in portions of spruce-fir forests in southern Colorado.

FOUR-EYED SPRUCE BARK BEETLE, *Polygraphus rufipennis* (Kirby).- A severe blow-down of red spruce and Fraser fir occurred in a local area in the vicinity of Mt. Mitchell in North Carolina early in March. Soon thereafter all of the down-trees were attacked by the four-eyed spruce beetle. Despite heavy broods in the wind-thrown trees, there was no build-up of the beetle population and few if any of the surrounding trees were attacked and killed.

PINE REPRODUCTION WEEVILS, *Hylobius*, *Pachylobius*, *Pissodes*, and *Cylindrocoptorus* spp. Several species of weevils are destructive to pine reproduction throughout the country and many of the species were quite abundant during 1956. The pales weevil, *Hylobius pales* (Hbst.), in particular, was destructive to young pine reproduction in east Texas, Arkansas, Louisiana, Mississippi and Alabama. In addition, two other weevils were damaging to young trees in the South. These species, Pachylobius picivorus Germ., and Pissodes nemoransis Germ., often occurred at the same time, and in the same areas where the pales weevil was prevalent and, together, they were responsible for failures in natural and artificial regeneration over fairly large areas. H. pales (Hbst.), and P. picivorus Germ., were both damaging in the southeastern States. The former was more common in the mountain areas, whereas the latter was predominant further south.

The white pine weevil, Pissodes strobi (Peck), was prevalent again throughout the Northeast, and in portions of the Lake States. This insect, which has long been known as a major pest of white pine plantations, is now commonly found in the Lake States attacking jack, red, Scotch, and Austrian pine, and Norway spruce.

The pine reproduction weevil, Cylindrocoptorus eatoni Buch. was reported to be causing extensive killing of ponderosa and Jeffrey pines in plantations on the Shasta-Trinity National Forest in northern California for the first time in several years.

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.). - The spruce budworm is one of the most destructive forest insects in North America and it is distributed throughout practically the entire range of susceptible host type in the United States. During the past decade outbreaks have been particularly severe in the Rocky Mountain States, in the Pacific Northwest, and in portions of the Northeast. More recently, populations have increased to epidemic proportions in parts of the Lake States. Currently infestations are most severe in northern and southern Idaho, in Montana, and in northern Minnesota.

The gross acreage of visible budworm defoliation in Montana and in northern Idaho was estimated at 3,532,000 acres this year and, although most of this acreage is classified as lightly defoliated, the budworm still poses a threat to the forest resource throughout the infestation area. In southern Idaho, epidemic populations occur on portions of the Boise, Payette, Salmon, Challis, Targhee, and Sawtooth National Forests, with a gross area of approximately 650,000 acres.

The epidemic in the Pacific Northwest which started in 1944 is still in progress but populations in 1956 were lower than at any time since detailed records were started in 1947. The infestation which now is confined to not more than 550,000 acres in eastern Oregon appears to be on the downward trend as a result of natural control factors. There is, however, an increasing population on portions of the Umatilla, Malheur and Wallowa-Whitman National Forests which pose a threat to the forest resources in that area.

Defoliation decreased sharply in the southern Rocky Mountains and light damage was recorded on about 200,000 acres as compared to heavier damage on 435,000 acres in 1955. Moderate defoliation was recorded on approximately 12,000 acres of mixed-conifer timber on the Mescalero Indian Reservation in southern New Mexico, however, and infestations appear to be worsening on the Rio Grande and San Juan National Forests in southern Colorado.

Survey work in the Lake States shows that defoliation occurs on approximately 419,000 acres within the spruce fir type in Minnesota with heaviest damage along the Canadian border, east of International Falls and southward to Lake Vermillion. Egg mass surveys throughout the infestation area indicate that the area of heavy defoliation will probably increase during 1957.

The budworm increased in extent and severity in northern Maine, particularly in the northeastern townships of the State, where infestations have persisted for the past nine years. The total area of noticeable tree defoliation now covers nearly 4,000,000 acres and, although little or no extension of the outbreak is expected in 1957, it is possible that defoliation within the current outbreak areas will be more severe.

Aerial spraying for control of the budworm during 1957 will probably be limited to about 1,000,000 acres in the northern Rocky Mountains.

JACK-PINE BUDWORM, Choristoneura pinus Free.- The extensive stands of jack-pine in Wisconsin, Michigan, and Minnesota are defoliated at periodic intervals by epidemic populations of this important forest insect. Usually, infestations flourish for a few years and then collapse rather suddenly as a result of natural control factors without causing severe damage to the host trees. The current infestations in portions of the Lake States, however, are more severe than for many years and persistent populations pose a severe threat to the jack-pine resource in some areas. The infestations in Wisconsin are extensive and the severity of defoliation has prompted public and private landowners to plan for control on some 215,000 acres during the summer months of 1957. In Minnesota, infestations are known to occur on approximately 100,000 acres and direct control may also be needed to suppress populations in portions of this area. The precise status of infestation conditions in Michigan is not known. It was noted, however, that populations declined in Luce County in the Upper Peninsula.

BLACKHEADED BUDWORM, Acleris variana (Fern.).- The outbreak of blackheaded budworm which occurred on some 16 million acres of hemlock stands in Alaska as late as 1953 was found to have subsided completely during 1956.

New outbreaks, however, in the northern Rocky Mountains pose a threat to stands of western hemlock and alpine fir in that portion of the country. A severe infestation on hemlock occurs on 5,000 acres in the McDonald Creek drainage at Glacier National Park and another outbreak covering an aggregate of 12,500 acres is located on portions of the Kaniksu and Kootenai National Forests in the extreme northwest corner of Montana. An infestation which covered about 14,000 acres in Yellowstone National Park during 1955 increased to 19,200 acres in 1956. In this area, however, most of the budworm caterpillars succumbed when they were about half grown from what was presumed to be a polyhedral virus disease. Plans are being made to control the active infestations by aerial spraying of formulated DDT insecticide.

BALSAM WOOLLY APHID, Chermes piceae (Ratz.). - Since 1954, the balsam woolly aphid has become highly epidemic in Pacific silver fir and subalpine fir stands in western Oregon and Washington. Tree-killing by this native European insect has now reached serious proportions, particularly in the Washington Cascades, and it seriously threatens the true fir stands in the Pacific Northwest. The extent and severity of infestations increased materially during the year. In acreage, infestations expanded from 295,000 in 1955 to 356,000 in 1956. Severity of attack also was more pronounced in all affected areas, particularly in stands of Pacific silver fir in the Mt. St. Helens region of Washington.

This insect is also a perennial pest of balsam fir in the Northeastern States and during the course of the past few years, it has killed from 10 to 20 percent of the merchantable trees in eastern and central Maine. Epidemic infestations of several years duration continued on the Green Mountain and White Mountain National Forests in Vermont and New Hampshire and from five to thirty percent of the fir volume has now been killed in these areas. The severity of tree killing by this pest species, in the West and in the East, has prompted landowners and land-managers to expand logging operations in the affected areas to salvage the dead and dying timber.

Another species of aphid, C. nusslini Bor., also is prevalent on Frazer fir in a limited area along the Blue Ridge Parkway in northern Virginia. This species has been known in this area for several years but only recently has it caused mortality of the host tree. The infestation appears to be limited to within several miles radius of Skyland and direct control may be attempted in this area to prevent additional tree-killing in the high value recreational sites.

SPRUCE MEALYBUG, Puto sp. - There have been heavy infestations of an undetermined species of Puto mealybug on Engelmann spruce on the Fishlake and Dixie National Forests in southern Utah for the past several years. The species affects all ages of trees and it has caused considerable damage to the spruce stands on some 60,000 acres. Studies have not been made on life history and habits of the pest and there are no methods known for use in its control.

LODGEPOLE NEEDLEMINER, Recurvaria milleri Busk. - The epidemic infestations of this important forest insect continued unabated on the 50,000 acre area in the vicinity of Toulumne Meadows at Yosemite National Park, and on the 3,000 or more acres at Sequoia-Kings Canyon National Park in California. Defoliation of the lodgepole pines was severe in both areas and many of the trees are now being killed as a result of defoliation alone. Of equal or more importance, however, is that tree-weakening from needleminer infestations is giving rise to a gradual increase in tree-killing bark beetles. There was, in fact, an epidemic population of Dendroctonus monticolae Hopk. in the needleminer outbreak area at Toulumne Meadows and increased beetle activity also was noted at Sequoia-Kings Canyon.

Another needleminer, presumably a species of Recurvaria, occurred on about 50,000 acres of ponderosa pine east of Springerville, Arizona, and near Datil, New Mexico. There has been no tree mortality in this latter infestation.

FIR NEEDLEMINER, Epinotia meritana Hein. - An outbreak of this needleminer on some 10,000 acres at Bryce Canyon National Park, and on adjacent areas of the Dixie National Forest in southern Utah, has been increasing in severity since 1949. The cumulative effects of defoliation has caused limb mortality in most of the trees, and some tree-killing has begun to occur. Of importance also is the fact that tree-weakening as a result of defoliation is giving rise to a build-up of bark beetles; for example, Scolytus ventralis Lec., is becoming a serious pest in the area. Attempts to control the needleminer in past years have been unsuccessful. However, new insecticides have been tested against the insect and the most promising of these will be used in control undertakings during 1957.

PINE NEEDLEMINER, Exoteleia pinifoliella (Chamb.). - For the third consecutive year, this insect has occurred in outbreak proportions on some 1,000 acres of pitch pine in the vicinity of New Philadelphia, Ohio. The same insect, or a closely related species, also was found on pitch and shortleaf pine on the Shawnee National Forest in southern Illinois. The infestations in all areas caused discoloration of foliage similar to that associated with bark beetle attack. Tree damage was not severe, however, and there were no efforts made to control the insect in any of the areas of infestations.

DEFOLIATORS OF WESTERN LARCH.- Feeding by several species of insects resulted in rather severe defoliation to an estimated 100,000 acres of larch timber in portions of western Montana, northern Idaho, and northeastern Washington during the summer and early fall months. The larch bud moth, Zeiraphera griseana (Hubner), was most frequently collected from the infestation area in June whereas in late August, a looper, Semiothisa sexmaculata (Pack.), was the principal cause of defoliation. Several species of undetermined sawflies also were found feeding on larch foliage during June, and in September. The relative importance of the insects in this area of defoliation have not been determined.

DOUGLAS-FIR TUSSOCK MOTH, Hemerocampa pseudotsugata McD.- The infestations of Doublas-fir tussock moth which occurred in outbreak proportions in northeastern Washington and northern Idaho during 1955 diminished to endemic status as a result of natural control factors during 1956. Other outbreaks which were located in the same general area during the year also were brought under control by natural factors. Infestations covering about 1,000 acres on the west shore of Flathead Lake in Montana, and another of similar extent near Plummer, Idaho, subsided during the caterpillar stage early in August because of the prevalence of polyhedral disease, and parasites. Another outbreak in some 10,000 acres of second-growth Douglas-fir in the Owyhee Mountains in Idaho is heavily parasitized and the population is expected to subside during 1957. The infestation which occurred on the Stanislaus National Forest in California was brought under control with DDT aerial spray and no other infestation is known in that State.

PINE SAWFLIES, Neodiprion spp.- Several species of Neodiprion sawflies occurred in outbreak proportions in many sections of the country. Although most of the species were active during the spring and early summer months, there were others which also occurred later. The unnamed species in this genus which has been rather abundant in white fir throughout the Sierra Nevada Mountains in California continued at about the same level of intensity as during the past several years. N. taedae linearis Ross caused varying degrees of defoliation to loblolly pine at scattered locations in low, wet sites in southern Arkansas and northern Louisiana. This species also was found in Poplar Bluff Ranger District of the Shawnee National Forest in southern Illinois and Missouri. During the spring months, complete defoliation of host trees occurred in localized areas in approximately 32,000 acres of the forest. Later in the year, a survey of egg deposition on shortleaf pine indicated light and scattered infestations over 240,000 acres and moderate to heavy infestations in an additional 30,000 acres.

The European pine sawfly, N. sertifer (Geoff.), was found on red and Scotch pine plantations over most of the northern half of Ohio, northeastern Indiana, parts of Illinois, and in southeastern Iowa. These infestations appear to be increasing in intensity, and they also are spreading into new areas. The species also caused complete stripping of planted red pines throughout northern New Jersey, southern Connecticut, and southern New York, and it was the major defoliator of red and Scotch pines in the southern half of Lower Michigan, and in southern Wisconsin. The red-headed pine sawfly, N. lecontei (Fitch), was abundant in many places throughout several of the southern states. It was also the most prevalent plantation pest in most of the Northeast; in the northern half of Lower Michigan; in Sherburne County, Minnesota; in most of Wisconsin; in southern Illinois; and in Ohio.

Several other species of sawflies were abundant in different parts of the country. N. swainei Midd. was reported for the first time in Minnesota when it was found on jack-pine in the vicinity of Littlefork. N. pratti pratti (Dyar) was epidemic on Virginia pine within the Patuxent River drainage in Maryland. N. pratti banksianea Roh. was abundant on jack-pine and N. nanulus Schedl. on red pine, in local areas in the Lake States and in St. Lawrence County in New York. N. pinetum (Nort.) occurred as a light infestation on white pine in southern New Jersey and light infestations on the same host were reported in Albany, Warren, and Rensselear Counties in New York. An undetermined species continued to be a serious pest on pinyon pine at the Colorado National Monument, and at Mesa Verde National Park, in Colorado and there was considerable defoliation of lodgepole pine by an unidentified species on some 1,300 acres in the Beckler River area of Yellowstone National Park in Montana.

HEMLOCK SAWFLY, Neodiprion tsugae Midd.- This insect which occurred in epidemic status on approximately 1.2 million acres of western hemlock between Ketchikan and Wrangell in Alaska during 1955 declined materially from natural causes in 1956. However, light and moderate defoliation continued in scattered locations in the vicinity of Ernest Sound and Clarence Straight, and along Greens Creek, on Admiralty Island. Populations of this insect have fluctuated greatly within the past few years and the degree of defoliation, of course, also has been variable. Light defoliation is expected to continue at scattered locations within the present infestation area during 1957.

LARCH SAWFLY, Pristiphora erichsonii (Htg.).- The larch sawfly continued in epidemic status throughout northern Minnesota and populations increased in tamarack stands in northern Wisconsin and Upper Michigan. Tree mortality as a result of defoliation during the current sawfly epidemic has not been widespread, heretofore having occurred only in "off-site" stands in northeastern Minnesota. Currently, however, as much as 22 percent of the total number of trees have died on better sites and it is to be expected that additional tree-killing will occur in the future if sawfly populations remain at their present high levels.

EUROPEAN PINE SHOOT MOTH, Rhyacionia buoliana (Schiff.).- The severity and extent of shoot moth infestations increased in the extensive pine plantations throughout the Lake States and Central States Regions. Serious injury to red and Scotch pines was general in Lower Michigan and the insect has spread to several additional areas in portions of Wisconsin. Heavy infestations also were noted in the upper two-thirds of Ohio and Indiana, and it was not unusual to find as much as 90% of the shoots damaged on 4-8 year old red and Scotch pines in many areas.

The Nantucket pine moth, R. frustrana (Comst.), occurred generally in young loblolly and shortleaf pine plantations throughout the South and Southeast. In many cases as much as 80 percent of the developing shoots were attacked and trees up to 20 feet in height were severely infested. There were several overlapping broods in these areas and tree growth was severely retarded.

TENT CATERPILLARS, Malacosoma spp.- There was considerable reduction in the severity and the extent of tent caterpillar infestations in all areas of susceptible host type throughout the Nation. Where millions of acres of hardwoods were severely defoliated by M. disstria Hbn., throughout the Lake States and the Northeast in 1954 and 1955, only a few thousand acres were affected during 1956. Infestations in the Northeast appear now to be confined to small scattered areas in Maine and those in the Lake States were noticeable only in the northern part of Wisconsin, and on a portion of the Keweenaw Peninsula, in Michigan.

M. fragilis Stretch was recorded on some 300,000 acres of aspen in northern New Mexico and on about 140,000 acres in southern Colorado. This also is a reduction in acreage of infestations from previous years. The decline of populations on the Carson National Forest in New Mexico is attributed to a polyhedral virus disease which occurs naturally in these areas and efforts are being made currently to propagate and distribute the virus organisms as a means of hastening this decline. Reports indicate that infestations in southern Colorado are severe in some places and plans are being made to continue control by spraying with DDT in areas heavily used for recreation.

GYPSY MOTH, Porthetria dispar (L.).- Infestations of this important insect pest are at a low ebb over most of New England. However, the recent spread of the moth into central New York, and northern New Jersey and Pennsylvania, presents a threat to vast stands of susceptible timber southward and eastward. Approximately one-third of the State of New York is now infested in varying degrees. In an effort to prevent spread, and to suppress epidemic populations in outbreak areas, some 942,000 acres of forest lands in the northeastern states were aerially sprayed by public agencies during 1956. Intensive trapping of moths on some 1-1/2 million acres in Michigan by Pest Control Branch, ARS, indicated that the infestation in this State has been greatly reduced by spray programs to date. Only two moths were recovered from some 5,000 traps and areas in which they were found will be sprayed again in 1957 in an effort to eradicate the pest from the State.

SNOW-WHITE LINDEN MOTH, Ennomos subsignarius (Hbn.). - This insect caused severe defoliation of hickory, oak, walnut and other hardwoods in northern Georgia for the second successive year. The outbreak increased from an area of 1,500 acres in 1955 to some 50,000 acres during 1956. Defoliation on most of this area was moderate to heavy. Despite the severity and duration of the infestation, however, there has been no tree-killing in the area to date. Examination of broods in the outbreak areas revealed that parasites affecting the pupae, and a disease affecting the larvae, may bring the outbreak to an end.

LARGE ASPEN TORTRIX, Archips conflictana (Wlk.). - This insect was responsible for the defoliation of aspen over extensive areas in the Upper Peninsula of Michigan. In some places, and on areas as large as 26,000 acres, trees suffered as much as 75 percent defoliation. Similar outbreaks also occurred in portions of Oneida County, Wisconsin.

A. argyrospila (Wlk.) occurred in outbreak proportions and stripped the oak stands on some 215,000 acres in Crawford County, Michigan. It also defoliated sugar maple on the Dukes Experimental Forest in the Upper Peninsula of Michigan, and on the Menominee Indian Reservation in Wisconsin.

SADDLED PROMINENT, Heterocampa guttivitta (Wlk.). - Moderate defoliation caused by this insect occurred over a large area west of Millinocket, Maine, and populations were at a high level in eastern Rensselear County in New York. The extensive infestations which occurred in western Massachusett during 1955 declined from natural causes, and a disease killed many of the larvae in an outbreak area in Door County, Michigan. Direct control was undertaken on 2,150 acres in New York to suppress epidemic populations in hardwood stands near the Massachusetts border. It is not expected that a need will exist for a continuation of control in 1957.

VARIABLE OAK LEAF CATERPILLAR, Heterocampa manteo (Dbldy.). - This insect was unusually abundant in Maryland and Delaware, and large areas of mixed oak were severely defoliated in both of these states.

FALL CANKERWORM, Alsophila pometaria (Harr.). - Outbreaks of this insect caused complete stripping of foliage from attacked trees in scattered localities in Maine, Connecticut, New Jersey, Pennsylvania, and Maryland. Some of the infestations were rather extensive but no tree mortality was observed in any area.

SARATOGA SPITTLEBUG, Aphrophora saratogensis (Fitch.). - The Saratoga spittlebug is one of the most important insect pests affecting red pine and mixed red and jack-pine plantations in the Lake States. Plantations in which trees have reached a height of about three feet are most susceptible to damage and remain so until the trees reach 15 or more feet in height. The insect is most prevalent in Wisconsin and in the Upper Peninsula of Michigan. It is of little significance, however, in Minnesota. Surveys during 1956 revealed heavy populations on about 12,000 acres in scattered plantations in Wisconsin and Michigan and direct control will be required to prevent tree-damage and tree-killing in those areas.

WALKINGSTICK, Diapheromera femorata (Say.). - The even-year brood of this walkingstick caused severe defoliation of oak stands at two locations in Michigan. Some 800 acres were infested in Dickenson County and 45,000 acres in Ogemaw County. Inasmuch as defoliation occurs only in alternate year, the trees are not readily killed in outbreak areas. There was, however, some tree-mortality in the Ogemaw County infestation as a result of 25 years of alternate-year defoliation.

BOXELDER TWIG BORER, Proteoteras willingana (Kearf.). - An insect tentatively identified as the boxelder twig borer was found in widespread areas in shelterbelt plantings in North Dakota, and to a limited extent also in Montana and Minnesota. The insect appears to be of major importance in tree nurseries but it was also found in field plantings. The typical symptoms of damage on infested trees are small chlorotic leaves on the new shoots. The insect was found boring either in the terminal bud axis, or a lateral leaf axis, and infested trees assumed a "blighted" appearance. The relationship of tree damage to the twig borer is not known.

PINE TORTOISE SCALE, Toumeyella numismaticum (P&McD.). - The pine tortoise scale is an important pest of jack-pine in the Lake States at periodic intervals. The insect usually increases in sufficient numbers to cause mortality of most of the trees which have been attacked, then decreases rapidly due to natural control factors. The scale was not particularly abundant during 1956 although severe infestations did occur near Brainerd and Bemidji, and at other scattered locations, in Minnesota. An outbreak on some 400 acres of jack-pine in Chippewa County, and another one in Delta County, Michigan succumbed during the year due largely to predators.

BLACK PINE LEAF SCALE, Nuculaspis californica (Coleman). - This pest of coniferous trees is widely distributed in the western states and in some years it occurs in outbreak proportions over fairly large areas. Ponderosa pine is a favored host and persistent infestations often result in the death of young trees. The insect appeared to be on the wane during 1956. A long standing infestation in southern California was less severe than for many years and the epidemic in the vicinity of Spokane, Washington appears to have returned to an endemic status following heavy scale mortality from abnormally cold weather in March of 1950.

RED-PINE SCALE, *Matsucoccus resinosae* B. & G.- This scale insect is a major pest of red pine in portions of Connecticut and New York. Currently, the insect is distributed over an area of approximately 150 square miles in the Bridgeport, Connecticut area and, where infestations have persisted for the past several years, all of the red pines are gradually being killed. No increase has been reported of spot infestations in southeastern New York or of those on Long Island.

PINE LEAF APHID, *Pineus pinifoliae* (Fitch).- This pest, which attacks white pine and red spruce in alternate years, was very abundant on white pine during the year in New York, Vermont, New Hampshire, and Maine. Some mortality of young pines occurred in New York and Vermont where infestations have been present for several years. Severe flagging of the tips of trees was also observed over a wide area in eastern Maine.

TEXAS LEAF-CUTTING ANT, *Atta texana* Buckley.- This insect has long been known as a defoliator of plants in Texas and Louisiana and, in recent years, it has become an important pest of pine seedlings in many parts of these two States. Usually, little damage is caused to pine reproduction when other green plants are available but during the winter months, serious damage to seedlings occurs. The ants presumably have become more abundant in recent years in the dry soil in drought areas. Where the insects are plentiful, it has been necessary recently to fumigate the soil as a preplanting procedure.

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